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*Ruth Montalvo*  
Ruth Montalvo

*30 April 02*  
Date

Docket No.: GK-ZEI-3151/500343.20152

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Ralf WOLLESCHENSKY, Bernhard ZIMMERMANN and Sebastian TILLE  
Serial No.: 10/057,571  
Filed: January 24, 2002  
For: METHOD FOR INVESTIGATING A SAMPLE

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to receipt of a first Office Action, please amend the above-identified application as follows:

**IN THE SPECIFICATION**

Cancel the present specification and substitute therefor the enclosed substitute specification.

**IN THE CLAIMS**

Page 22, change "Patent Claims" to -What is claimed is--.

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Cancel claims 1-29 and add new claims 30-58, reading as follows:

--30. (New) A method for investigating specimens, wherein a spectral splitting of the radiation coming from the specimen is carried out for specimen points or point distributions, for the operation of a laser scanning microscope or a fluorescence screening arrangement or a flow cytometer, comprising the steps of:

generating a  $\lambda$ -stack so that the spectral distribution is measured by individual detection channels; and

storing the signals so as to be correlated to the detection signals with at least one of the spatial coordinates x, y or z and/or so as to be correlated to the measurement time t.

31. (New) The method according to claim 30, wherein image channels allocated by color or spectral region and color correlation of false color images are generated.

32. (New) The method according to claim 30, wherein ROIs are marked as relevant specimen areas by means of an input device or automatically.

33. (New) The method according to claim 30, wherein the ROIs are used to form reference spectra.

34. (New) The method according to claim 30, wherein a color-coded image is generated by superimposing a plurality of image channels when a plurality of dyes are contained in a specimen area.

35. (New) The method according to claim 30, wherein ROIs are marked as relevant specimen areas by an input device, reference spectra are formed from the ROIs and a color-coded image is generated from the reference spectra by quantitative analysis.

36. (New) The method according to claim 30, wherein ROIs are marked as relevant specimen areas by means of an input device and a quantitative analysis is carried out by means of reference spectra from a stored database.

37. (New) The method according to claim 30, wherein a qualitative analysis is carried out and relevant specimen areas are formed as ROIs which are used for forming and storing reference spectra.

38. (New) The method according to claim 30, wherein an input device is provided for selecting dyes which are quantitatively analyzed by means of a dye database and are displayed.

39. (New) The method according to claim 38, wherein the dye database is generated by marked ROIs.

40. (New) The method according to claim 30, wherein the ratio of the spectral components is formed from a color-coded image formed by superposition of a plurality of image channels for determining the ion concentrations.

41. (New) The method according to claim 30, wherein image channels or detection channels corresponding to unwanted signals such as autofluorescence or reflection or nonspecific fluorescence are eliminated.

42. (New) The method according to claim 30, wherein  $\lambda$ -stacks corresponding to the measured spectral distribution with individual detection channels are calculated from a stored color-coded image and a reference spectrum.

43. (New) The method according to claim 30, wherein additional images are formed and/or ROIs are marked and evaluated from these  $\lambda$ -stacks.

44. (New) The method according to claim 30, wherein the spectral width of the detection within which the spectral distribution is detected collectively and to which an image channel is allocated is variable.

45. (New) The method according to claim 30, wherein the spectra are evaluated in ROIs.

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46. (New) The method according to claim 30, wherein adjusting elements are provided for adjusting the spectral width.

47. (New) The method according to claim 30, wherein the adjusted spectral width is generated by digital signal combination or electronic combination of detection channels.

48. (New) The method according to claim 30, wherein adjusting elements and the spectral width are displayed on a monitor in such a way that the adjusting areas of the adjusting elements are spatially correlated to the spectral width.

49. (New) The method according to claim 30, wherein sliders are provided, whose position on the monitor corresponds to the position of the associated spectral region.

50. (New) The method according to claim 30, wherein the adjusted wavelength is indicated by adjusting the pointer of a computer mouse on the adjusting element, and the adjusted wavelength area is indicated on the monitor by adjusting between two adjusting elements.

51. (New) The method according to claim 30, wherein a wavelength-dependent display of the temporal behavior of specimen areas or of the entire specimen is carried out on a monitor.

52. (New) The method according to claim 30, wherein a gray scale image is generated from the lambda stack in that the maximum intensity value is determined and displayed for every x,y pixel position over the wavelength regions.

53. (New) The method according to claim 52, wherein, further, every pixel is characterized by the color which corresponds to the mean wavelength of the wavelength region from which the brightest pixel of the lambda stack originates.

54. (New) The method according to claim 30, wherein the individual images of the lambda stack are displayed on a screen at least partially in series so as to overlap adjacent to one another or one behind the other.

55. (New) The method according to claim 30, wherein time-dependent and/or z-dependent views are also generated and displayed in addition to an x,y lambda display.

56. (New) The method according to claim 30, wherein the lambda stack is sectioned and the resulting section images are displayed.

57. (New) The method according to claim 30, wherein the quantitative analysis involves an unmixing process.

58. (New) The method according to claim 30, wherein the qualitative analysis involves a PCA process.--

IN THE ABSTRACT OF THE DISCLOSURE

Please add the enclosed Abstract of the Disclosure which is attached to the Substitute Specification.

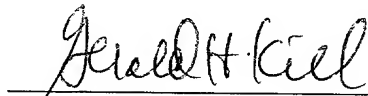
REMARKS

Claims 1-29 have been cancelled and new claims 30-58 have been added. The amendments to the claims have been made only to improve the form of the claims for examination purposes.

The specification has been amended to conform it to U.S. format and an Abstract of the Disclosure has been added.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

By:   
Gerald H. Kiel  
Reg. No. 25,116

April 29, 2002  
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GHK:jl

Enc.: Substitute Specification  
Abstract of the Disclosure  
Marked-up/Bolded Versions

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